

IN THE SPECIFICATION

[13] Figure 3 is a cross-sectional view through two pivot connections according to the ~~present invention~~ prior art.

[16] Figure 2 is an exploded view of one pivot connection, and Figure 3 is a cross-sectional view through connections 22 and 28. As shown, the link 24 leads to an ~~end wall~~ cup portion 25 which receives the link 26. The link 26 has a generally hollow cylindrical portion 27 which provides its portion of the pivot joint. The end wall 25 includes a cup portion 32 extending forwardly, and defining the fluid chamber 34 surrounding a threaded central member 36. A threaded central member 36 is formed to be fixed with the end wall 25. Member 36 could be attached, or formed with the ~~end wall~~ 25. However, for purposes of this invention, what is most important is that the threaded member 36 remains fixed relative to the end wall 25 (Fig. 3). As shown, a fluid passage ~~34-38~~ leads outwardly through the cup 32 to communicate water through a connection ~~38-28~~ into the showerhead 20. Thus, water from the chamber 34 leads into passage 38, and outwardly through the showerhead 20. A passage 40 extends through the link 26, and through a similar passage 41 to supply water to the chamber 34.

[17] As is also clear from Figure 3, each of the pivot ~~joint connection portions~~ 22 and 28 have a guiding boss portion provided by one of the two links. In the illustrated embodiment, the cup 32 includes a boss portion 68 and an end ledge 70. The cylindrical portion 27 includes its own cylindrical extending boss 74 which is received abutting the ledge 70 and about the boss 68. A similar ledge 72 is formed on the cylindrical portion 27, and sandwiches

the seal 46 between the two members. This portion of the pivot connections 22 and 28 are identical. The inner diameter of the boss 74 and the outer diameter of the boss 68 can be closely machined to very tight tolerances. This ensures that there is resistance to relative movement between the links once the nuts are tightened. Thus, this guiding boss-like mount structure ensures the links are less likely to rotate at the pivot joints.

[19] The two pivot connections are generally identical, as mentioned above. One distinction is that between the link 24 which is connected directly to the showerhead 20, and the ~~pivot fluid connection 22~~28, there is a sliding connection 60. This connection allows the link ~~24~~28 to rotate 360° about a central axis X. This allows the showerhead to pivot to a desired angle. The connection between the link 26 and the fixed mount member 62 does not allow similar movement. The fixed mount member 62 is identified as a third link for purposes of this application. As is clear from Figure 3 also, the threaded member 36 does not have a uniform outer diameter. Instead, the threaded member 36 has an enlarged outer diameter portion 63, then a somewhat smaller diameter portion 64, and an even smaller diameter portion 66 adjacent the passage 38. In this way, the flow of water between the passage 41 and the passage 38 is not unduly restricted. Since the threaded member 36 is fixed to the end wall 25, the desired angular position of the smaller portion 66 relative to the flow passages such as passage 38 can be as desired. If the threaded member 36 could rotate, then of course the smaller portion 66 could become misaligned.

[20] The present invention thus provides benefits in that since the bolt 36 is fixed to one of the links, and will not rotate relative to the two links to loosen the joint. Notably, the

immovability of the bolt 36 relative to the links is independent of the attachment of the nut.

Further, the boss-support surface which can be closely machined also ensures the joint is less likely to loosen. Instead, the link will be more reliable than the prior art, and the likelihood of the showerhead moving is dramatically reduced. The bolt may be welded or otherwise fixed, or formed integrally with the cup.